

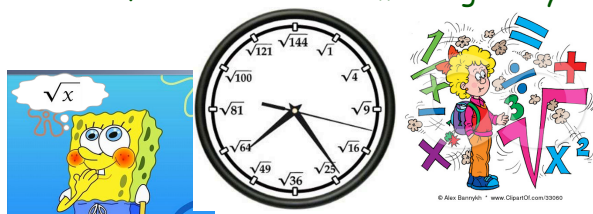
## Chapter 6 Square Roots & the Pythagorean Theorem

### 6.1 Finding Square Roots Activity/Lesson

Unit Question: How do we use signs and symbols to help us?

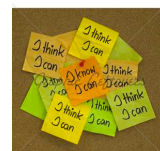
Learner Profile: Inquirer

Area of Interaction: Human Ingenuity



## I Can Statement:

I can understand and find square roots.



## Journal page 117:

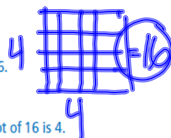
**Essential Question** How can you find the side length of a square when you are given the area of the square?

When you multiply a number by itself, you square the number.

Symbol for squaring is 2nd power.

$$4^2 = 4 \cdot 4 = 16$$

4 squared is 16.



To "undo" this, take the **square root** of the number.

Symbol for square root is a radical sign.

$$\sqrt{16} = \sqrt{4^2} = 4$$

The square root of 16 is 4.

### 1 ACTIVITY: Finding Square Roots

Work with a partner. Use a square root symbol to write the side length of the square. Then find the square root. Check your answer by multiplying.

a. Sample:  $s = \sqrt{121} = 11$  ft

Area =  $121 \text{ ft}^2$

$$s^2 = 121$$





**Check**

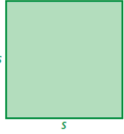
$$\begin{array}{r} 11 \\ \times 11 \\ \hline 11 \\ 110 \\ \hline 121 \end{array}$$


The side length of the square is 11 feet.


$$\begin{array}{r} 11 \\ 33 \\ \hline 33 \\ \hline \end{array}$$


b. Area = 81 yd<sup>2</sup> 

c. Area = 324 cm<sup>2</sup> 

d. Area = 361 mi<sup>2</sup> 

e. Area = 2.89 in.<sup>2</sup> 

f. Area = 4.41 m<sup>2</sup> 

g. Area =  $\frac{4}{9}$  ft<sup>2</sup> 

## Definition of Square Root:

A **square root** of a number is a number that when multiplied by itself, equals the given number. Every positive number has a positive *and* a negative square root. A **perfect square** is a number with integers as its square roots.

Find the 2 square roots of 25.

5 times 5 equals 25.

-5 times -5 equals 25.

The symbol  $\sqrt{\quad}$  is called a **radical sign**. It is used to represent a square root. The number under the radical sign is called the **radicand**.

Positive Square Root $\sqrt{\quad}$	Negative Square Root $-\sqrt{\quad}$	Both Square Roots $\pm\sqrt{\quad}$
$\sqrt{16} = 4$	$-\sqrt{16} = -4$	$\pm\sqrt{16} = \pm 4$

## Finding Square Roots:

Find the square root(s)

Example 1:  $\sqrt{25} = \pm 5$

Example 2:  $\sqrt{100} = \pm 10$

Example 3:  $\sqrt{144} = \pm 12$

### Finding Square Roots:

Find the square root(s)

Example 1:  $-\sqrt{25} = -1 \cdot 5 = -5$

Example 2:  $\pm\sqrt{81} = \pm 9$

Example 3:  $\sqrt{\frac{1}{4}} = \frac{1}{2}$

### Finding Square Roots (Honors):

Find the square root(s)

Example 1:  $\sqrt{2.25} = 1.5$  because  $1.5 \times 1.5 = 2.25$   
 $\frac{9}{4} = \frac{3}{2}$

Example 2:  $\pm\sqrt{\frac{4}{25}} = \pm\frac{2}{5}$

### More Examples:

Example 1:  $5\sqrt{36} = 5 \cdot 6 = 30$

Example 2:  $4\sqrt{144} = 4 \cdot 12 = 48$

Example 3:  $\sqrt{\frac{18}{2}} = \sqrt{9} = 3$

### Classwork- Workbook Activity 6.1 p117-119

Homework - Textbook p234  
1-3all, 8-16 even, 17-23all

